



RAM PRODUCTS, INC.®

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www.ramprodinc.com ☎ 1-877-RAM-PROD / 1-732-651-5500

RAMPOWER 35/45



INSTRUCTION MANUAL

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PARTS LIST

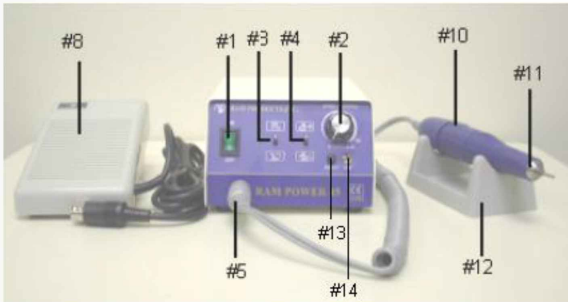


Illustration #1

1. Power switch
2. Speed control dial
3. Hand/Foot switch
4. Forward/Reverse switch
5. Handpiece cord connector
6. Foot switch cord connector (see Illus.#3)
7. Power plug socket (see Illus.#3)
8. Foot pedal (on/off) if equipped
9. Variable foot pedal (see Illus.#4) if equipped
10. Handpiece (micromotor)
11. Collet
12. Rubber stand (handpiece rest)
13. Overload Button (reset button)
14. Red Light Indicator

ASSEMBLY

1. Handpiece (#10) cord plugs into the lower left socket (#5), marked motor on the control box.
2. Foot pedal (#8) plugs into the back lower left socket, (#6) marked foot switch on the control box. Please see rear or Illustration #3.
3. Plug the power cord to an electrical outlet. Make sure that the outlet is properly grounded and compatible to the voltage input requirement:

NOTE: Please check the power switch. It must be in “off” position before plugging the power cord to an electrical outlet. The speed control must be set to minimum and check the voltage switch selection to be sure it is set at the proper voltage either 110 volts or 230 volts.

4. Turn the power switch (#1) to “on” position. The green light should glow.
5. The handpiece is now ready for operation.
 - a. HAND MODE - (#3 switched upward), the speed of the motor is set with the control knob by turning it clockwise.
 - b. FOOT CONTROL MODE - (#3 switched downward)
 1. With the on/off foot pedal (Item #8518), step on the foot pedal and gradually turn the speed control knob clockwise until the desired speed is attained.
 2. With the variable foot pedal (Item #8519C or 8519F), gradually step on the pedal until the desired speed is attained.

WARNING: The handpiece should always be on the rubber stand when not in use to avoid dropping or rolling of the handpiece. Permanent damage may occur to the handpiece.

CONTROLS AND OPERATION

I. RAMPOWER 45/RAMPPOWER 35

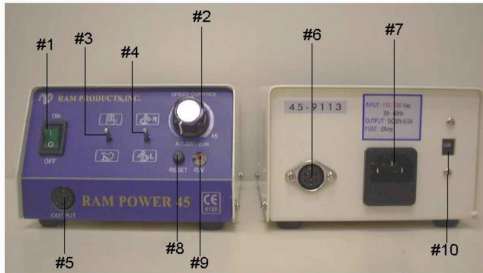


Illustration #2

Illustration #3

1. POWER SWITCH. (#1) It is located in the upper left from panel of the control box. It turns the control box on and off. Switch should be in the "off" position when not in use.
2. SPEED CONTROL DIAL, 0-35,000 RPM, or 45,000 RPM (#2) When using the control box in the hand mode turn dial clockwise to increase speed and counterclockwise to reduce speed. Dial should be turned fully counterclockwise to the minimum position when not in use or before turning it off.
3. FOOT/HAND SWITCH. (#3) When set in the hand position the speed is completely controlled by the speed dial knob. When set in the foot pedal mode the speed is controlled by the setting of the knob when using the on/off pedal and the speed is completely variable when using the variable foot pedal.
4. FORWARD-REVERSE SWITCH. (#4) When the switch is set upward, the handpiece operates in the forward (clockwise) direction. When the switch is set downward, the handpiece operates in the reverse (counter-clockwise) direction.

Please note: there is also a neutral setting to prevent accidental changes of direction.

CONTROLS AND OPERATION

5. HANDPIECE CORD OUTLET. (#5) The handpiece plugs in here.
 6. FOOT SWITCH CONTROL OUTLET. (#6) The foot pedal cord plugs in here, either the on/off or variable speed foot controller.
 7. POWER PLUG SOCKET. (#7) The power cord is plugged here.
- Warning:** The control box is designed for one Input AC voltage only. Make sure that the available electrical power is compatible with the voltage input requirement of the control box. (Refer to Assembly, #3)
8. OVERLOAD BUTTON. (#8) Push to reset control box upon safety overload
 9. REDLIGHT. (#9) Indicates a problem causing circuit overload.
 10. 110v/230v. (#10) Switch from 110 volts or 230 volts.

RAMPPOWER 35 / RAMPPOWER 45 SPECIFICATIONS:

Model RAMPPOWER35 / RAMPPOWER45

Input: 110V/230V, 50/60 Hz

Output: 0-32Vdc; Output: 0-32Vdc

Fuse: 2AMP

Weight: 4.5 lbs. (2.04kg)

Operating Speed Range: 0-35,000RPM / 0-45,000RPM

Length: 6.25" X Width: 4.75" X Height: 3.25"

L: 156.25mm x W: 118.75mm x H: 81.25mm

Environmental Operating Condition Range:

Temperature : 5 to 40 Celsius (41 to 104 o F)

Altitude : up to 2000 meters (2187.2 yards)

Pollution Degree 2

Over-voltage category II

Relative Humidity 30 to 80 %

CONTROLS AND OPERATION



Illustration #4

II. Foot Controllers

8. **ON/OFF PEDAL (Part #8518).** The on/off foot pedal sends power to the handpiece. The speed of the handpiece is set and controlled by the speed control dial (#2 – see Illus. #1) of the control box.
9. **VARIABLE SPEED FOOT PEDAL (Part 8519C or 8519F).**
Controls the speed of the handpiece variably. Unit is designed to override the setting on the speed control dial
- Item #8519C is a transistorized variable control. Its superior designed electronic trigger switch, controlled by a miniature PC board provides smooth and easy speed variation. Foot pedal is made of cast iron.
 - Item #8519F is a potentiometer type with gears and soft touch with precise and accurate speed control. Foot pedal is made of plastic housing with a metal base.

NOTE:

The foot controllers are classified as drip proof (IPX1).

Warning: The foot controller is not to be used in operating rooms.

Do not use your foot pedal on any other product.

CONTROLS AND OPERATION

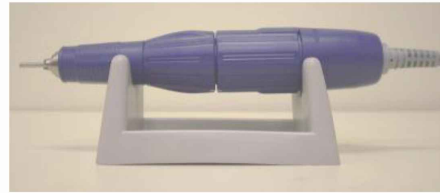


Illustration #5

III. Handpiece

HANDPIECE SPECIFICATIONS FOR

Tech2000 Handpiece / 45000 Handpiece

DC 32 Volts/1 AMP (Maximum 1.5 AMP)

Weight: 9.76oz; Length: 6"; Diameter: 1.1"

Weight: 272.1 grams; Length: 152.4mm; Diameter: 27.9mm

10. **COLLET RELEASE.** Turn in clockwise direction towards "R" arrow to release the bur from the collet. The collet release is spring loaded. You will feel the spring get harder to turn as you twist and then a click or snap will be felt as the chuck release opens. Turn counter clockwise direction towards "S" arrow to secure bur in collet. (See Illustration 6)
11. **COLLET. (#11)** Insert bur, brush, mandrel etc. into the collet. Replacement collets are available in either 3/32", and optional 3mm or 1/8" for the Standard Lab.
12. **HANDPIECE REST or RUBBER STAND. (#12)** Holds handpiece when not in use. It is recommended to keep handpiece in handpiece rest away from the control box to avoid demagnetizing the handpiece motor.
13. **WRENCH TOOL.** Used to change or replace collets.

NOTE:

a) It is normal for the handpiece to warm up slightly on continued use.

b) Do not expose to water or use in wet locations.

Tech 2000 HANDPIECE/ 45000 HANDPIECE

INSTRUCTIONS FOR CHANGING BRUSHES

The brushes are located in the back of the handpiece, in the section closest to the power cord.

- 1) Hold the front section of the handpiece with one hand and un screw the rear cover(1¼" long ring) at the back of the handpiece with the other hand.
- 2) Remove both of the old brushes using a small Phillips head screwdriver. Remove the two screws holding the brushes – one on each side and the brushes are easily removed.
- 3) Insert the new brushes and secure with the two Phillips head screws and attach the rear cover.
- 4) New brushes may take several hours during the break in period where the handpiece may run slightly warmer than usual.

INSTRUCTIONS FOR CHANGING CHUCKS FOR TECH 2000 HP / 45000 HP

The Tech 2000 handpiece was designed for ease and simplicity in changing chucks.

- 1) Turn set ring (part #102-14) clockwise to open chuck (towards you).
- 2) Using the wrench tool (included with handpiece), place the triangle section of the wrench over the top of the chuck turning counter-clockwise until the chuck is completely unscrewed and is loosened from the spindle.
- 3) Insert a different size chuck or replacement chuck and using the chuck wrench tool with the triangle section over the top of the chuck, turn the wrench tool clockwise until the chuck is completely tightened.
- 4) Final adjustment of the chuck is needed by turning the wrench tool approximately ¼ turn counter-clockwise (to loosen the chuck).

Tech 2000 HANDPIECE/ 45000 HANDPIECE

- 5) Turn set ring counter-clockwise (away from you) to lock or secure chuck and bur or mandrel.
- 6) Check carefully to make sure the bur is securely held by the chuck by gently pulling on the bur or mandrel. The bur should be firmly locked in place.
- 7) If the bur is not tightened properly and secured, repeat steps 4 and 5. If the bur is easily removed while the chuck is closed, the chuck needs to be tightened. If the chuck does not properly lock the bur or if it is difficult to remove the bur when the chuck is locked then the chuck needs to be loosened slightly by using the wrench tool counter-clockwise.

Note: Please do not remove the complete spindle assembly.

Warning: DO NOT use handpiece without the bur or chuck properly secured. Permanent damage to the motor is possible.

Replacement chucks:	3/32" -2.35mm	-	Part #T02-13
	3mm	-	Part #T02-13A
	1/8" -3.17mm	-	Part #T02-13B
	1/16" -1.60mm	-	Part #T02-13C

SUGGESTED MAINTENANCE

1. Carbon brushes in handpiece motor are designed for long life (approximately 1,000 hours). Carbon brushes should be replaced periodically (approximately 1 year). Replacement part # 8507.
2. Keep clean from dust and grindings as best as possible.
3. Wipe handpiece only with isopropyl alcohol and avoid getting inside wet. It is normal for the handpiece to feel slightly warm after continued use. Use standard ISO burs, 3/32" (2.35MM). Avoid using rusty or eccentric burs as this will cause excess wear on the bearings. Follow safety speeds and precautions recommended by the bur manufacturer. Always wear a dust mask, eye protection, and use adequate suction or ventilation.
4. Do not drop the handpiece at any time as this may cause damage to the bearings. In the event the handpiece is dropped, please check that the bur is not bent and resume use carefully, checking for excess noise or heat. If any damage, please return to manufacturer for service.

Tech 2000 HANDPIECE/ 45000 HANDPIECE

PRECAUTIONS

1. When using electric tools, use basic safety precautions in order to reduce risk of fire, electric shock, and personal injury.
2. Do not expose electric tools to water, or use in damp or wet locations.
3. Do not wear loose clothing or jewelry as they can be caught in the drill.
4. Do not attempt to service or repair handpiece, control box, or the foot pedal. There is no user serviceable part in the equipment other than changing the motor brushes or handpiece cord. Repair should be referred to the manufacturer, dealer or authorized service center.
5. Do not oil, lubricate, or grease the handpiece (This will only lead to further damage of the greased sealed bearings).
6. Do not attempt to open collet (release bur) while handpiece is running.
7. Do not switch forward or reverse direction until motor has completely stopped.
8. Do not sterilize or autoclave. Do not get handpiece wet (except for the front-end attachments with the "E"-type motor).
9. When machine is not in use, power switch should be turned off.
10. Do not run handpiece without a bur properly locked in place

WARNING:

NEVER TURN SET RING WHILE MOTOR IS ROTATING. PERMANENT DAMAGE TO THE MOTOR IS POSSIBLE.

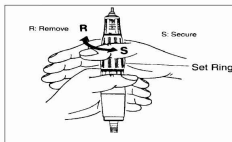
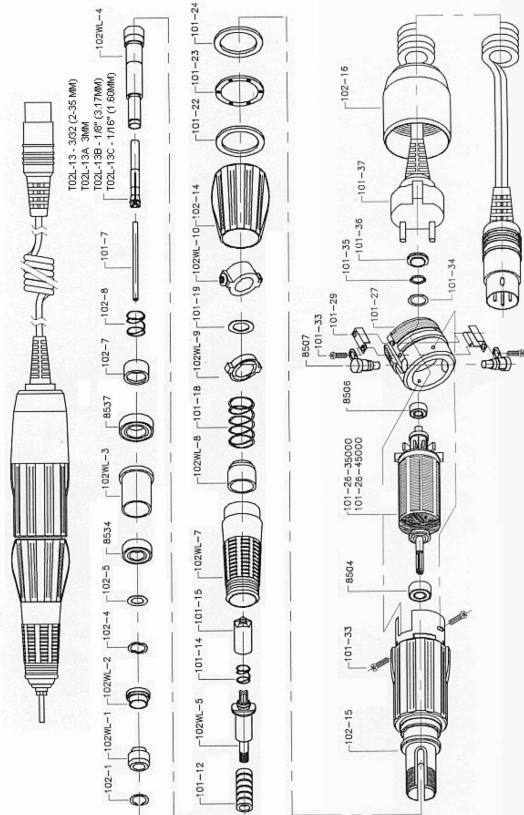


Illustration #6

SCHEMATIC DIAGRAM














TECH2000 HANDPIECE\45000 HANDPIECE



PARTS LIST FOR TECH2000 HANDPIECE / 45000 HANDPIECE

ITEM #	DESCRIPTION
102-1	Front C Clip
102WL-1	Dust Seal A
102WL-2	Dust Seal B
102-4	Wave Washer
102-5	Dust Shield for Bearing
8534	1260ZZ Ball Bearing
102WL-3	Bushing For Spindle
8537	1480ZZ Ball Bearing
102-7	Rear Spindle Collar
102-8	Rear Spindle Collar Spring
101-7	Blank Mandrel
T02L-13	3/32" (2.55mm) Standard Chuck
T02L-13A	3mm Collet Chuck
T02L-13B	1/8" (3.17mm) Collet Chuck
T02L-13C	1/16" (1.60mm) Collet Chuck
102WL-4	Main Spindle Shaft
101-12	Coil Spring
102WL-5	Chuck Joint
101-14	Spring For Delrin Joint
101-15	Delrin Joint Fitting
102WL-7	Front Brass Sheath
102WL-7A	Plastic For Brass Sheath
102WL-8	Spring Cover
101-18	Coil Spring
102WL-9	Cam For Multichuck Feature
101-19	Flat Washer
102WL-10	Roller Ring
102-14	Set Ring
101-22	Thrust Ring
101-23	Thrust Bearing
101-24	Thrust Ring
102-15	Motor Housing
102-15A	Plastic For Motor Housing
101-33	Brush Holder Screw
8504	940ZZ Front Motor Bearing
101-26-35000	35,000 RPM Motor
101-26-45000	45,000 RPM Motor
8506	830ZZ Rear Motor Bearing
101-27	Carbon Brush Holder
101-29	Terminal Clips
8507	Round Carbon Brushes (Discontinued)
8508	Square Carbon Brushes
101-33	Brush Holder Screws
101-34	Brush Holder Spacer
101-35	Rubber D-Ring
101-36	Brush Holder Cap Screw
101-37	Plug-In Cord Assembly
102-16	Motor End Cap

GLOSSARY OF SYMBOLS (Symbols and Description)

	RPM	
Alternating Current	Revolution per minute	Protective Earth Ground
		
Direct Current	On (Power connection to the mains)	Off (power disconnection from the mains)
IPX1		
Protected from dripping water	Fuse	Attention, Consult Accompanying Document
		
Always Keep on Dry Place	Fragile	This Side Up
		
Foot Control Mode	Hand Control Mode	Forward/Reverse

REPAIRS OR SERVICE:

Please be sure to properly box and insure your package. If uncertain of the part(s)/component(s) needing service, it is best to send everything. Place your name, address, phone number and/or fax along with a note describing the nature of the problem inside the box. All warranty claims must have a warranty card on file or be accompanied by a copy of your purchase invoice. All packages are to be sent pre-paid, including duties and taxes if applicable.

WARRANTY:

**CONTROL BOX & FOOT CONTROL - 1 YEAR; HANDPIECE (MOTOR) - 6 MONTHS
DOES NOT INCLUDE MISUSE OR NORMAL WEAR OF BEARINGS OR CARBON BRUSHES.**

